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EXAMINER

FEGGINS, KRISTAL J

ART UNIT PAPER NUMBER

2861

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/686,037

Applicant(s)

HOLSTUN ET AL.

Examiner

K. Feggins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 8, 11, 12 and 21-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9, 10, 13-20 and 33 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4, 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-20 & 33 are drawn to a print head classified in class 347 subclass 47
 - II. Claims 21-24 are drawn to an inkjet printer classified in class 347, subclass 40.
 - III. Claims 25-31 are drawn to a method of depositing drops of ink with an inkjet printer, classified in class 347 subclass 77.
2. The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the printer may utilize other types of printhead to function, such as a piezoelectric, acoustical, thermal, laser print heads. The subcombination has separate utility such as the print head may be utilized in other printers such as an piezoelectric, acoustic, thermal, laser printers.

Inventions II and III are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as

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claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process as claimed could be practiced by materially different apparatus, such as a print head in which the print head does not have tilted nozzles.

Inventions I and III are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the process for using the product as claimed can be practiced with another materially different product, such as a print head that utilizes nozzles that are not tilted.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. With respect to this application, Group I claims are directed to the following patentably distinct species of the claimed invention:

Species I, illustrated in Figure 10B

Species II, illustrated in Figure 10C

Species III, illustrated in Figures 10D

Species IV, illustrated in Figure 10E

Species V, illustrated in Figure 10F

Species VI, illustrated in Figure 10G

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5. Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no claim is generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

6. During a telephone conversation with Mr. Sismilich on 13 December 2002 a provisional election was made with traverse to prosecute the invention of group I, species V, claims 1-7, 9-10, 13-20 & 33. Affirmation of this election must be made by

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applicant in replying to this Office action. Claims 8, 11-12, 21-32 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to the non-elected inventions.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-7, 9-10, 17 & 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Lorenze, Jr. et al. (US 5,461,406).

Lorenze, Jr. et al. disclose the following claimed limitations:

* a printhead for ejecting drops of a fluid onto a medium during movement along a scanning axis (col 2. lines 8-14)

* a plurality of chambers for controllably ejecting the drops (Abstract, col 3, line 56-col 4, line 25, fig 1);

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* a nozzle member attached to the printhead and defining a wall of each of the chambers, the nozzle member having a planar surface positionable adjacent the medium (col 3, line 56-col 4, line 25, figs 1-2);

* a plurality of nozzles formed in the nozzle member/channel plate/ and in fluidic communication with each chamber, wherein certain ones of the nozzles have a nozzle axis tilted along the scanning axis (figs 1-2 & 5-6) .

* wherein the nozzle axis is tilted so as to deposit during a single fluid deposition operation a main drop and at least one satellite drop from an individual one of the plurality of nozzles in substantially the same location on the medium (col 6, lines 18-37, 47-68, col 7, line 8-col 9, line 5)

* wherein the nozzle axis is tilted so as to deposit during consecutive fluid deposition operations drops from an individual one of the plurality of nozzles substantially along a printing axis parallel to the scanning axis (col 6, lines 38-46, fig 4).

* wherein the planar surface is positioned generally parallel to a surface of the medium being printed (fig 3d).

* wherein the planar surface is co-planar with a printing plane of the medium (figs 5-7).

* wherein the certain ones of the nozzles (27) have a non-circular bore through the nozzle member (fig 1, item 27).

* wherein the nozzle axis is tilted between 0.2 degrees and 1.4 degrees/-2.5° to +4.5°/ from vertical (col 7, line 48-col 8, line 5, figs 5-7).

* wherein the nozzle axis is tilted between 0.4 degrees 2 and 0.9 degrees /-2.5° to +4.5°/ from vertical (col 7, line 48-col 8, line 5, figs 5-7).

* wherein the non-circular bore/channel/ is symmetrical about the scanning axis but asymmetrical about a medium advance axis orthogonal to the scanning axis (figs 5, & 8, col 6, lines 60-67, col 7, lines 7-25, 48-60).

* wherein the composition of the nozzle member/channel plate (28, 31)/ is substantially uniform (figs 5, 6)

* further including a supply of a fluid fluidically coupled to the plurality of chambers/channels/ (col 3, lines 56-67, col 4, lines 1-25).

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

10. Claim 33 is rejected under 35 U.S.C. 102(b) as being anticipated by Maze et al. (6,371,596 B1).

Maze et al. disclose the following claimed limitations:

- * a printhead (Abstract)

- * a plurality of chambers for controllably ejecting drops of a fluid onto a medium; a nozzle member attached to the printhead and defining a wall of each of the chambers (col 1, lines 39-60);

- * a plurality of nozzles/orifices/ formed in the nozzle member/orifice plate/ and in fluidic communication with corresponding ones of the plurality of chambers, wherein certain ones of the nozzles have a non-circular bore/hourglass orifice/ through which a main drop and at least one satellite drop/subdroplets/ are sequentially deposited onto the medium during a single ink ejection operation (Abstract, col 1, lines 39-60, col 4, line 66-col 5, line 25, col 6, line 55-col 7, line 29, fig 8b, 9b).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claim 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lorenze, Jr. et al. (US 5,461,406) in view of Ando (EP 08357759 A1, IDS).

Lorenze, Jr. et al. disclose all of the claimed limitations except for the following:

- * wherein the bore has the shape of a pie with a wedge removed.

Ando et al. disclose the following claimed limitations:

- * wherein the bore/nozzle/ has the shape of a pie with a wedge removed (figs 22A) for the purpose of discharging the obtained mixture for accurately expressing the gradation (p. 14, lines 35-36, fig 22A)

It would have been obvious at the time of the invention was made to a person having ordinary skill in the art to utilize a bore that has the shape of a pie with a wedge removed, taught by Ando into Lorenze, Jr. et al. for the purpose of discharging the obtained mixture for accurately expressing the gradation.

13. Claims 14, 16, 19 & 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lorenze, Jr. et al. (US 5,461,406) in view of Mantell et al. (US 5,731,827).

Lorenze, Jr. et al. disclose all of the claimed limitations except for the following:

- * wherein the plurality of nozzles are grouped into a set of odd nozzles and a set of even nozzles, and wherein the nozzle axes of each of the odd nozzles and each of the even nozzles are tilted in the same direction along the scanning axis.

- * wherein the drops of the fluid are ejected at substantially the same firing frequency during movement in both a forward and a rearward direction along the scan axis.

* wherein both the supply of the fluid and the printhead are mounted in a print cartridge moveable along the scanning axis.

* wherein the printhead is mounted in a print cartridge moveable along the scanning axis and fluidically coupled to the supply of the fluid positioned in a different location.

Mantell et al. disclose the following claimed limitations:

* wherein the plurality of nozzles are grouped into a set of odd nozzles and a set of even nozzles, and wherein the nozzle axes of each of the odd nozzles and each of the even nozzles are tilted in the same direction along the scanning axis (col 9, lines 45-65) for the purpose of obtaining optimum distribution of ink flow throughout the system.

* wherein the drops of the fluid are ejected at substantially the same firing frequency during movement in both a forward and a rearward direction along the scan axis (col 4, lines 30-36, col 5, line 66-col 6, line 24) for the purpose preserving printing throughput when resolution is increased.

* wherein both the supply of the fluid and the printhead (20) are mounted in a print cartridge (12) moveable along the scanning axis (col 4, lines 20-30, fig 1) for the purpose of expelling droplets of ink from selected ones of the printhead nozzles toward the sheet of paper.

* wherein the printhead (20) is mounted in a print cartridge (12) moveable along the scanning axis and fluidically coupled/by ink conduits or channels/ to the supply of the fluid positioned in a different location/of the housing (18)/ (col 4, lines 20-30, fig 1) for the purpose of carrying ink from the housing to the respective ink ejectors.

It would have been obvious at the time of the invention was made to a person having ordinary skill in the art to utilize a plurality of nozzles are grouped into a set of odd nozzles and a set of even nozzles, and wherein the nozzle axes of each of the odd nozzles and each of the even nozzles are tilted in the same direction along the scanning axis; drops of the fluid are ejected at substantially the same firing frequency during movement in both a forward and a rearward direction along the scan axis; both of the supply of the fluid and the printhead are mounted in a print cartridge moveable along the scanning axis; and a printhead that is mounted in a print cartridge moveable along the scanning axis and fluidically coupled to the supply of the fluid positioned in a different location, taught by Mantell et al. into Lorenze, Jr. et al. for the purposes of obtaining optimum distribution of ink flow throughout the system, preserving printing throughput when resolution is increased, expelling droplets of ink from selected ones of the printhead nozzles toward the sheet of paper and carrying ink from the housing to the respective ink ejectors.

14. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lorenze, Jr. et al. (US 5,461,406) in view of Kitahara et al. (US 6,048,052).

Lorenze, Jr. et al. disclose all of the claimed limitations except for the following:

* wherein the plurality of nozzles are grouped into a set of odd nozzles and a set of even nozzles and wherein the nozzle axes of each of the set of odd nozzles is tilted in one direction along the scanning axis and the nozzle axes of each of the set of even nozzles is tilted in an opposite direction along the scanning axis.

Kitahara et al. disclose the following claimed limitation:

* wherein the plurality of nozzles are grouped into a set of odd nozzles (rows D, C and figs 1 & 9) and a set of even nozzles (rows B, A of figs 1 & 9) and wherein the nozzle axes of each of the set of odd nozzles (rows D, C and figs 1 & 9) is tilted/stagger/ in one direction along the scanning axis and the nozzle axes of each of the set of even nozzles (rows B, A of figs 1 & 9) is tilted/stagger/ in an opposite direction along the scanning axis (figs 1 & 9, col 1, line 61-64, col 2, lines 43-60, col 5, lines 20-24) for the purpose of providing an ink jet recording head capable of reducing relative displacement of dots among a plurality of nozzle opening rows to a smallest possible level.

It would have been obvious at the time of the invention was made to a person having ordinary skill in the art to utilize a plurality of nozzles are grouped into a set of odd nozzles and a set of even nozzles and wherein the nozzle axes of each of the set of odd nozzles is tilted in one direction along the scanning axis and the nozzle axes of each of the set of even nozzles is tilted in an opposite direction along the scanning axis, taught by Kitahara et al. into Lorenze Jr. et al. for the purpose of providing an ink jet recording head capable of reducing relative displacement of dots among a plurality of nozzle opening rows to a smallest possible level.

Response to Arguments

15 In regards to Applicant's arguments that claim 1 is not a generic claim is acknowledged. However, upon further consideration to the application a new restriction has been implemented. Please see the above office action.

Communication With The USPTO


16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Feggins whose telephone number is 703-306-4548. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, B. Fuller can be reached on 703-308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

K7
KF

December 13, 2002


LAMSON NGUYEN
PRIMARY EXAMINER 12/16/02